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Analysis of the upper limit of the Southworth-hawkins d criterion for the Pons-winneckid and perseid meteoroid streams

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Abstract

The value of the upper limit of the Southworth-Hawkins D criterion for the Pons-Winneckids (June Bootid) and Perseids meteor streams is analyzed on the basis of the comparison of the parent comet orbit with the model orbits of meteoroids ejected at different points of the comet orbit with the most likely ejection velocities. The change of the D values is investigated depending on the dynamic evolution of the streams by integrating forward the orbital elements of the model particles using the Cowell method taking into account the perturbations from all planets. It is shown that after ten rotations, for Pons-Winneckids the upper limit of the D criterion is higher than 0.5 and for Perseids the D criterion does not exceed 0.2. © Pleiades Publishing, Inc., 2009.

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